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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHRISTENSEN, RYAN S	
ART UNIT	PAPER NUMBER
2856	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,845	BREKELMANS ET AL.	
	Examiner	Art Unit	
	Ryan Christensen	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-33 and 35-38* is/are rejected.

7)☒ Claim(s) *7 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 August 2005* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/7/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the mixing of the combustion gas with oxygen in a ratio based on the measured temperature difference, or the means for doing so must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining

figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 8 objected to because of the following informalities: the dash following "coriolis" should be deleted. Appropriate correction is required.

5. Also, "once amended" is not a recognized status identifier, please see MPEP 714 (II) (c) (A) and (E) for appropriate status identifiers and their use.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 6, 9, 11-13, 22, 24, 31, 33, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 3,393,562 (Breedlove).

8. With respect to claim 1, Breedlove discloses a temperature difference sensor (12-15 and Col. 2, lines 48-61) comprising a first temperature measurement (13) downstream of a heat source (Combustion, see fig. 1 and Col. 2, lines 48-61)

and a means to determine a temperature difference upstream and downstream of the heating element (Col. 2, lines 54-56), flow control means comprising flow measuring means for measuring a mass flow characteristic (differential pressure sensor, 34) and flow correction means for correcting the measured mass flow variations (38 and 32, Col. 6, lines 6-9), a characteristic feature of the flowing substance (Wobbe Index) is determined based on the a function relating temperature differences measured on one or more calibration gases (c is determined by passing a gas or know calorific value trough the calorimeter) to one ore more characterizing features of the flowing substance (ie differential and absolute pressures, Col. 4, lines 42-73).

9. With respect to claim 2, the function comprises a calibration equation (Col. 4, line 65).

10. With respect to claim 3, Breedlove discloses a flow rate means for adjusting flow through the duct in a detection range of the temperature difference sensor (15 and 16, Col. 3, line 44-48).

11. With respect to claims 4, 22, and 31 the system maintains a substantially constant pressure over the temperature sensor by maintaining a constant flow rate of heat of combustions (Col. 2, line 66 to Col. 3, line 3).

12. With respect to claims 6, 24, and 33, the flow measurements means disclosed by Breedlove is a mass flow sensor (Col. 4, lines 7-12) which is maintained constant (Col. 4, lines 13-42).

13. With respect to claims 9, 13 and 38, Breedlove additionally discloses changes in the temperature variation can be effected with a controller (Col. 3, lines 33-48).

14. With respect to claims 11, 12, and 36, Breedlove discloses a pressure correction means for maintaining an absolute pressure (40 and 38, Fig. 2).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. Claims 1, 3, 4, 8, 11, 12, 14, 15, 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,167,450 (Nukui et al) in view of U.S. Patents 3,393,562 (Breedlove) or U.S. Patent Application Publication 2002/0141945 (Foster et al.)

18. With respect to claims 1 and 21, Nukui et al. disclose a transport duct (81, Fig. 5) on which a heating element is mounted (80b, Fig. 5), temperature difference sensor (8a) comprising a first temperature sensor downstream of the heating unit and means for determining the temperature difference in flowing substance upstream and downstream of the heating element (Col. 7, lines 16-21), flow control means (8) comprising flow measuring means (8a) for measuring mass flow characteristics and flow correction means for correcting measured mass flow variations (8b), and evaluation means (computer) for evaluating a characteristic feature of the flowing substance (calorific value, mass flow) related to the measured flow characteristics (Col. 8, lines 3-10 and).

19. Nukui et al. do not explicitly disclose that the value would be based in part on the differential sensing of a calibration gas. It is generally well known in the art of measuring and testing gasses to calibrate a device with a calibration gas of known properties in order to make more accurate measurements. U.S. Patent 3,393, 562 (Col. 4, lines 68-73), and U.S. Patent Application Publication 2002/0141945 (paragraph 0113) disclose the use of a known gas in order to calibrate a calorimeter.

20. However, it is well known in the art to calibrate a calorimeter system based on a differential temperature by using a sample gas of know heat conductivity. See ().

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by Nukui et al., by including a calibration substance in order to provide a more accurate measurement.

22. With respect to claim 3, Nukui et al. disclose a flow regulator for regulating the output of the flow controller to a constant value (Col. 4, lines 52-55).

23. With respect to claims 4, 22, and 31, Nukui et al. disclose pressure sensors 5 and 8 and a flow regulation device for setting and regulating the output flow to a constant value (Col. 4, lines 52-58) as well as a reducing valve for introducing the gas at a constant pressure (Col. 4, lines 40-52).

24. With respect to claims 11 and 12, the pressure reducing valve (2) maintains a constant absolute pressure in the flowing substance.

25. With respect to claim 14, Nukui et al. disclose the transport duct is mounted as a bypass on a mail duct (Fig. 5).

26. With respect to claim 15, it would be obvious to one of ordinary skill in the art to include a switch for turning off the flow control means (8b) and the rest of the apparatus could continue to operate to take measurements.

27. With respect to claims 17-20, and 27-29 Nukui et al. disclose determining the heat capacity or heat of combustion or Wobbes index of a flowing substance (ie characterizing the substance with the temperature differential). One of ordinary skill in the art would be aware this property could be used to identify the flowing substance and where different substances have different sources it could identify the source of the substance.

28. With respect to claims 8 and 35, Nukui et al. discloses a mass flow sensor but does not explicitly disclose the use of a Coriolis, sonic or ultra sonic nozzle to sense the mass. However, these mass flow sensors are known in the art and it

would have been well with in the purview of one of ordinary skill in the art to replace the mass sensor disclosed by Nukui et al. with a Coriolos or ultrasonic mass flow sensor because the courts have held substituting an equivalent for the same known purpose not to be inventive (See MPEP 2144.06).

29. Claims 5, 10, 23, 32, 36, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claims 1 and 21above, and further in view of U.S. Patent 5,311,447 (Bonne).

30. With respect to claim 5, 10, 23, 32, 36, 37, the combination as applied to claim 1, Nuiki et al. disclose keeping constant absolute temperature and pressure (Col. 6, lines 3-14) does not explicitly disclose using a computer to compensate the calculated values when either the absolute pressure or temperature vary.

31. Bonne discloses a system for the measurement of gases fed to combustion devices. Boone operates in a manner similar to that of Nukui et al, with a heater and temperature sensor for detecting the heat capacity of thermal conductivity of a gas. Bonne goes on to disclose the importance of maintaining the constant temperature and pressure, as well as a method of correcting measurements when the temperature and pressure vary (Col. 9, lines 58-66, Col, 18, lines 3-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by Nukui et al. by compensating for changes in the absolute temperature and pressure through known calculations in order to arrive at more accurate results.

32. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claims 1 and 21above, and further in view of European Patent Application 0,554,095 (Bonne).

33. With respect to claim 30, the combination as applied to claim 21 does not explicitly disclose the detected parameters for determining a mixing ratio. However, Bonne discloses mixing oxygen with the combustion gas in based on the sensed parameters such as heat capacity (page 7, lines 47-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system disclosed by the combination as applied to claim 21 by using the measured parameters to determine the ratio for mixing the combustible gas and oxygen in order supply to ensure efficient combustion.

Allowable Subject Matter

34. Claims 7 and 34 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Christensen whose telephone number is 571-272-2683. The examiner can normally be reached on Monday - Friday, 8am - 5pm.

36. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

37. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RC

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